

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. RI-61182/JC

Date: August 16, 1999

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

REISSUE APPLICATION TRANSMITTAL

Transmitted herewith is the application for reissue of U.S. Patent No. 5,687,865 issued on November 18, 1997

Inventors: Brian M. Adams, Newark; Hoa Pham, Mountain View; Daniel Luch, Morgan Hill, all of California

Title: SPILL-REDUCTION CAP FOR FLUID CONTAINER

Enclosed are the following:

1. Specification, claim(s) and drawing(s)

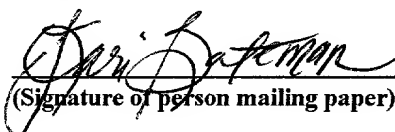
- (a) ☒ 1 page-cover sheet  
☒ 4 page(s) of specification  
☒ 4 page(s) of claims  
☒ 1 page(s) of abstract
- (b) ☒ 3 sheet(s) of drawing  
☒ formal  
☐ informal  
☒ No changes in the drawings upon which the original patent was issued are to be made. Therefore, in accordance with 37 CFR 1.174, please find attached, in the size required for original drawings:
- ☒ a copy of the printed drawings of the patent.  
☐ a photoprint of the original drawings.

(c) See Certificate of Correction

CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this Reissue Application Transmittal and the documents referred to as enclosed therein are being deposited with the United States Service on this date **August 16, 1999** in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number **EL 173 825 372 US** addressed to the: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

KARI BATEMAN

  
(Signature of person mailing paper)

NOTE: Each paper or fee referred to as enclosed herein should have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 CFR 1.10(b)

**2. Declaration and power of attorney**

☒ 4 pages of declaration and power of attorney (Unexecuted)

**3. Offer to surrender the original letters patent in accordance with 37 CFR 1.178 is attached**

☒ offer to surrender is by the inventor  
☒ along with assent of assignee

**4. Basic Filing Fee Calculation (37 CFR §1.16(h), (i) and (j))**

CLAIMS AS FILED				
Number Filed	Number Extra	Rate	Basic Fee (37 CFR 1.16(h)) \$760.00	
<b>Total Claims (37 CFR 1.16(j))</b>	<b>29- 20 (and also in excess of total claims in patent)</b>	<b>4 X \$18.00</b>	<b>\$72.00</b>	
<b>Independent 3 - 3 Claims (37 CFR 1.16(i))</b>	<b>- (number of inde- pendent claims in patent)</b>	<b>X \$78.00</b>	<b>\$0.00</b>	
<b>Filing fee Calculation</b>			<b>\$ 832.00</b>	

**5. Authorization To Charge Additional Fees**

☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1300, RI-61182/JC.

Reg. No. 14,785

Tel. No. (650) 494-8700

  
Julian Caplan

FLEHR HOHBACH TEST  
ALBRITTON & HERBERT LLP  
4 Embarcadero Center, Suite 3400  
San Francisco, California 94111-4187

## CROSS-REFERENCE TO RELATED APPLICATIONS

This Application is a Continuation-in-Part of pending U.S. patent application entitled Cap for Fluid Container with Threaded Neck by Brian M. Adams and Daniel Luch Ser. No. 08/436,936, filed May 8, 1995, now U.S. Patent No. 5,662,231 which is a continuation-in-part of Ser. No. 08/016,577 filed Feb. 10, 1993, now abandoned, which is a Continuation-in-Part of Ser. No. 07/772,949, filed Oct. 8, 1991, now U.S. Pat. No. 5,232,125.

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates to a new and improved cap for a fluid container which is formed with a conical well which splits when pierced by a dispenser probe and substantially recloses when disengaged from the probe. More particularly, the invention relates to a snap-on cap for a bottle neck having a crown finish either with or without a superimposed threaded finish which is tamper-evident and includes spill reduction features.

#### 2. Description of the Related Art

Plastic push-on bottle caps for use with container necks having a crown finish with a superimposed threaded finish are shown in U.S. Pat. Nos. 3,392,860 and 3,979,002 as well as elsewhere in the art. The present invention provides a cap which engages both the crown finish of the neck and the threaded finish. Further, means is provided whereby the cap cannot be removed from the neck without tearing off a portion of the cap and hence the cap is tamper-evident.

Push-on caps have been in public use by the assignee of this Application. However, the use of barriers to prevent unscrewing the cap has not previously been known in the art.

Caps having wells pierced by dispenser probes are likewise known.

The use of foam disks on the undersides of the tops of plastic caps to seal against the lip of a neck are also known in the art.

### SUMMARY OF INVENTION

Two basic forms of cap are disclosed. One is used to close the neck of a bottle of the type having a crown positioned below the lip with a restricted diameter portion above the crown and a screw thread around the restricted diameter portion. Bottles of this type have been used commercially. The lower portion of such bottle is usually rectangular in cross-section so that a plurality of bottles may be stacked on top of each other without the necessity of using pallets. Such bottles have heretofore been closed by a metal screw cap having threads engaging the threads on the bottle. To make the system tamper-evident, a plastic snap-on overcap has been used. However, stacking of bottles causes increased hydraulic pressure to be exerted on the bottom bottles, and this is aggravated by hydraulic "hammer" resulting from transportation by truck. This has resulted in leakage.

The use of a metal screw cap has been found somewhat undesirable because of its tendency to rust.

Another development in use in water bottles is a type cap which remains on the bottle and is provided with sealing means to prevent leakage from the bottle when it is installed in a water dispenser and also when it has been removed. The aforesaid metal caps and plastic overcaps have not been found adaptable to this new development.

669780 4915260

The use of caps, such as shown in U.S. Pat. Nos. 3,392, 860 and 3,979,002, in stacked bottle installations has been found to be unsatisfactory, because during transport the "hydraulic hammer" forces the cap upward on the neck. If a foam liner is used under the top of the cap, such liner tends to separate from the neck as the cap is forced upward.

In this form of the present invention, a plastic push-on type cap is used having a top under which is installed an annular foam plastic gasket. The skin of the cap has a restricted diameter upper portion which is internally threaded. Vertical "barriers" are formed below the internal thread, preventing the cap from being removed from the neck threads so long as the cap is intact. Below the restricted upper portion, the skirt expands outwardly and has an internal locking bead which snaps over and engages the underside of the crown finish of the neck. The lower skirt portion extends downwardly and frictionally engages the exterior of the neck. The barriers engage the ends of the threads of the neck and such ends are tapered both in width and in thread height to function as wedges or ramps. The barriers are bowed outward if an attempt is made to unscrew the cap while the lower skirt portion is intact and thereby the cap threads unseat from the neck threads. Hence repeated turning of the cap does not unscrew the cap from the neck.

Vertical tear lines extend up from the bottom edge of the cap to the region of the internal threads and a tear tab is provided which, when pulled, tears the cap along the scorelines. Once the cap is torn, evidence of tampering appears. Further when the cap is torn the lower skirt does not inhibit upward movement of the cap and hence the cap may be unscrewed or merely lifted off the neck.

In installing the cap, the tear tab provides an orientation means which aligns the cap threads with respect to the neck threads so that when the cap is forced axially downwardly over the neck, the cap threads expand outwardly to clear the neck threads and then contract to mate with the neck threads, thereby insuring that the cap does not have to be screwed onto the neck. Simultaneously, the lower portion of the skin seats on the crown of the cap and the locking bead seats under the crown bead of the neck. The barriers are located adjacent the neck thread ends so that unscrewing the cap causes the barriers to ramp up over the thread ends.

The second basic form cap is a modification of U.S. Pat. No. 5,370,270, to which reference is made.

An important feature of both caps is the elimination of spillage when the bottle is installed in a conventional water dispenser and a considerable reduction in spillage of any water which may remain in the bottle when the bottle is removed from the dispenser. Accordingly, a conical well is formed in the center of the top of the cap, the well having a rounded bottom. A scoreline is formed, preferably on the interior of the cap, consisting essentially of three continuous sections, namely, a first section extending down from the top, a second section extending across the rounded bottom of the well and a third section extending from the second section up to the top of the cap, all three sections lying in a common diametric plane.

A common form of water dispenser has a hollow, apertured probe extending vertically upward so that as the bottle, with cap attached, is lowered into the dispenser, the probe engages the well and causes the well to split along the scoreline, permitting water to flow from the bottle into the probe and then to the dispenser. A short rib is formed extending perpendicular to the scoreline. The tip of the probe first contacts the rib and initiates tearing the well apart at the scoreline. When the user wishes to remove the bottle,

withdrawal of the probe from the well allows the well to close at least partially, to reduce the amount of water which may flow out of the bottle while it is being removed from the dispenser and restored to upright position.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings which are incorporated in the form as part of this specification illustrate embodiments of the invention and, together with a description, serve to explain the principals of the invention:

FIG. 1 is a side elevational view of the neck of a bottle with which one of the caps of the present invention may be used, being partially broken away in section.

FIG. 2 is a bottom plan view of a cap used with the neck of FIG. 1.

FIG. 3 is a vertical sectional view taken substantially along the line 3—3 of FIG. 2.

FIG. 4 is a vertical sectional view showing the cap of FIG. 2 installed on the neck of FIG. 1.

FIG. 5 is a schematic vertical sectional view showing a water dispenser probe extending through the well of a cap.

FIG. 6 is a view similar to FIG. 3 of a modified cap.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with the preferred embodiments, it will be understood that they are not intended to limit the invention to those embodiments. On the contrary, the invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims.

One form of cap of the present invention is used on a water bottle, the body of which (not shown) is generally rectangular in cross-section so that a number of bottles which are horizontally disposed may be stacked on top of each other. The neck 11 of such a bottle has a lip 12 from which depends a restricted diameter cylindrical vertical stretch 13. One turn of external screw thread 14 is applied to the stretch 13 and is generally slightly greater than 360° in extent. As shown in FIG. 1, the ends 15 of thread 14 taper both in width and in thickness to function as wedges or ramps, as hereinafter appears. Below vertical stretch 13 is an enlarged external bead or crown 16 and below the crown 16 is a concave portion 17 and below portion 17 is a generally rounded portion 18.

In the form of the invention shown in FIGS. 2-5, cap 21 has a top 22 which is circular and a vertical skirt stretch 23 depends from the periphery of top 22. A slightly less than 360° internal screw thread 24 is formed on the interior of the vertical stretch 23. Vertical barriers 26 are formed on the interior surface of stretch 23 extending downwardly from thread 24. Barriers 26 are angularly spaced apart along thread 24 and also extend to the level of the lower end of thread 24. As described below, the presence of barriers 26 prevents the cap from being removed, so long as the cap is intact.

Below vertical stretch 23 cap 21 expands downwardly and outwardly in a slanted stretch 27 and below the stretch 27 is a second vertical stretch 28. On the interior of stretch 28 is an internal locking bead 31 which engages under crown 16 of neck 11. Below locking bead 31 the skirt 33 extends

downwardly to engage the surface 18 of neck 11 below concave portions 17.

Extending below bottom edge 34 of skirt 33 is tear tab 38. To one side of tear tab 38 extending upward from bottom edge 34 is external scoreline 36 which extends up the outside of cap 21 to the level of top 22. On the opposite side of tear tab 38 is second scoreline 37 which extends up from bottom edge 34 to the level of the bottom edge of slanted stretch 27. A break 32 in locking bead 31 extends between the scorelines 37 and 38.

Additional features of the cap 21 include an internal bead 71 at bottom edge 34 which, as shown in FIG. 4, engages neck 11 to prevent dirt from entering under the skirt 33. Breaks 72 in bead 71 occur corresponding to external scorelines 36 and 37.

To rigidify the upper end of the cap, external ribs 74 lying in vertical radial planes extend from top 22 to the bottom edge of slanted stretch 27.

A foam disk 39 which is annular in shape is installed on the underside of top 22. To improve engagement of disk 39, a circular internal bead 41 is formed on the underside of top 22 adjacent vertical stretch 23.

At the time of installation of cap 21 on neck 11, tear tab 38 is oriented with respect to the threads 14 and threads 14 are easily oriented by reason of the rectangular cross-section of the body of the bottle. When the cap 21 is pushed axially downwardly without rotation onto neck 11, bead 31 slips over the crown 16. Thread 24 expands and slips over thread 14. By reason of the orientation of the cap 21 relative to the neck 11, the threads 24 and 14 interengage tightly and there is no need to screw the cap onto the neck. Foam disk 39 seals on the lip 12 and against bead 41. Despite water hammer during transportation, the foam disk 39, the seating of the threads 14 and 24 and the seating of the bead 31 and crown 16 make the cap water-tight. Furthermore, it is also tamper-evident since the barriers 26 prevent the cap from being unscrewed so long as the cap is intact.

If one attempts to unscrew the cap, barriers 26 ride up on ramp 15. The cap stretches outward so that threads 14 and 24 disengage and repeated turning of the cap does not cause it to move upward relative to neck 11.

To remove the cap, one grips the tear tab 38 and pulls upwardly so that the cap tears along the tear lines 36 and 37. With the lower portion of the cap loosened it is possible for the consumer to then remove the upper portion of the cap, providing access to the contents of the container.

Top 22 is formed with a central conical well 46 having a very short cylindrical stretch at the top merging into conical side wall 47 which, in turn, merges into a rounded bottom 48. The level of bottom 48 is approximately that of the locking bead 31. Well 46 is formed with an internal scoreline 51 consisting of a first stretch 52 extending from adjacent the top of conical side 47 downwardly and merging with a second stretch 53 which extends across the bottom 48 and then merging with an upward stretch 54. The stretches 52, 53 and 54 lie in a common diametric plane. On the exterior of the bottom 53 is a rib 56 perpendicular to the plane of scoreline 51.

The container with cap 21 in place on neck 11 is inverted and installed in the dispenser by vertical downward movement. The dispenser has a hollow, apertured probe 61 extending vertically upwardly. As the bottle lowers, the tip 62 of probe 61 encounters rib 56 and then bottom 48 causing the well 46 to split along internal scoreline 51 until the position of FIG. 5 is obtained. Water enters probe 61 and flows into the dispenser as required.

After the contents of the bottle have been substantially depleted, the bottle is removed by lifting vertically upwardly. The two halves of the well 46 shown in FIG. 5 come together by reason of the resiliency of the plastic material of which the cap is molded. The well 46 is not restored to its original condition but substantial leakage is inhibited so that spillage of water onto the outside of the dispenser and/or floor is avoided. When the container is returned to the bottling works, an attendant grips tear tab 38, causing the cap to tear along scorelines 36 and 37 so that cap 21 may be removed.

Directing attention to FIG. 6, the well of the present invention may be installed in a different cap structure such as that shown in U.S. Pat. No. 5,370,270. Cap 76 fits on a container neck (not shown). Cap 76 has an annular top 77 and well 46a is positioned centrally thereof. The structure of well 46a resembles that of the preceding modification and the same reference numerals followed by the subscript a are used to designate corresponding elements.

Cap 76 has a rounded corner 81 disposed outwardly of top 77 and below corner 81 is a depending skirt 82. A tension ring 85 is located on the inside of the skirt 82 in a position to fit under the neck bead or crown (not shown) and to draw corner 81 toward the neck bead. Preferably, there is an internal seal bead 86 on the inside of the wall of the corner 81 which tightly engages the container lip and seals against leakage. Standoffs 84 are radially spaced apart and inward projecting to hold the wall of the skirt 82 outwardly of the concavity of the container neck and also facilitate pushing the cap 76 onto the neck.

In order to loosen the lower portion of skirt 82 so that cap 76 may be removed from the neck, a tab 89 extends downward from the bottom edge 88 of the skirt 82 and is formed with transverse finger grip ridges 91 to facilitate pulling the tab. Curving upwardly from bottom edge 88 adjacent tab 89 is a scoreline 92 which merges with a horizontal scoreline 93 immediately below tension ring 85. By pulling upward on the tab 89, the skirt tears along the scoreline 92 and then along a sufficient portion of scoreline 93 so that the lower portion of the skirt 82 releases its grip on the neck. So long as the skirt 82 is intact on the neck, it is practically impossible to remove the cap 76 and hence the cap is tamper-evident. Once the lower portion of the skirt is loosened, the upper portion of the cap may be removed and used as a reclosure cap.

It will be understood that in the preferred practice of the present invention, cap 76 is not removed prior to installation on the container in the dispenser. However, many times the consumer may wish to use the container in a different type of dispenser. Further, after the container has been returned to the bottling works, it is necessary to remove the cap 76 before the bottle is sterilized and refilled. Hence the tab 89, scorelines 92 and 93 are used for such purposes. A buttress or internal thickening 94 is formed adjacent the intersection of bottom edge 88 and the bottom of scoreline 92 to prevent unintentional tearing of the skirt along any lines other than the lines 92 and 93. The buttress 94 assists in confining the tear to the proper line.

When used in a dispenser of the type hereinabove described and wherein there is a probe, the cap of FIG. 6, in place on the container neck, is inverted. Penetration of the tip 62 causes the well 46a to fracture along internal scoreline 51a as in the preceding modification. When the bottle is withdrawn from the dispenser, the halves of the well 46a come together to inhibit leakage of water, as in the preceding modification.

The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims appended hereto and their equivalents.

100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720



1. A cap for use with a container neck having external means for detachably engaging said cap, said cap being shaped to fit over said neck and comprising

a top and a [shirt] skirt depending from said top to fit outside said neck, internal means on said skirt to engage said external means to hold said cap on said neck, said top being formed with a central well having a side wall and a bottom, [a] at least one scoreline [extending along said side wall and across] positioned on said bottom, whereby a probe forced into said well splits said [well] bottom along said scoreline so that said probe may enter said neck.

2. A cap according to claim 1 made of resilient material whereby said well is restored substantially to initial condition when said probe is withdrawn from said well to inhibit spillage from said container neck.

3. A cap according to claim 1 which further comprises a gasket on the underside of said top to seal said cap to said lip.

4. A cap according to claim [4] 3 in which said gasket is of foam plastic.

5. A cap according to claim [1] 2 in which said cap is of a resilient plastic whereby said second screw thread expands to slip over said first screw thread when said cap is pushed axially downward on said neck without relative rotation by external means of said cap and said neck.

6. A cap according to claim 5 for use with a container having first orientation means, said cap further comprising second orientation means cooperable with said first orientation means whereby when said cap is pushed axially downward on said neck said first screw thread and said second screw thread are inter-engaged.

7. In combination a container neck and a cap according to claim 1 in which said external means comprises a crown bead and said internal means comprises a locking bead positioned to engage under said crown bead to prevent removal of said cap from said neck when said cap is intact.

8. The combination of claim 7 which further comprises means for removing a portion of said [skirt containing said] locking bead to prevent removal of said cap from said neck.

9. A cap according to claim 1 in which said external means comprises a first screw thread and said internal means comprises a second screw thread.

10. A cap according to claim 9 wherein said neck has a lip, a cylindrical portion below said lip formed with said external first screw thread and a crown bead below said cylindrical portion, said first screw thread having [an] a thread end [formed as a ramp of reduced thickness],

said cap comprising a top and a skirt depending from said top, said skirt having a restricted diameter cylindrical upper stretch formed with said internal second screw thread shaped and positioned to mate with said first screw thread, an enlarged diameter stretch below said upper stretch for engaging said crown bead and an internal locking bead for engaging the underside of said crown bead, and at least one barrier extending downward from said second screw thread, said at least one barrier being horizontally aligned with said [ramp] thread end when said cap is installed on said neck, whereby turning said cap relative to said neck in an unwinding direction causes said cap skirt to expand outward and said second screw thread to disengage from said first screw thread.

11. A cap according to claim 10 which further comprises a plurality of downward extending second barriers angularly spaced apart [and] from said first-mentioned barrier and depending from said screw thread.

12. A cap according to claim [1] 10 in which said skirt extends below said enlarged diameter stretch to a bottom edge, a tear tab extending below said bottom edge and a tear line formed in said skirt adjacent said tear tab extending up from said bottom edge to said upper stretch.

13. A cap according to claim 12 in which said tear line is substantially vertically disposed and which further comprises a second tear line approximately parallel to said first-mentioned tear line disposed on the side of said tear tab opposite said first mentioned tear line extending up from said bottom edge to said upper stretch.

14. A cap according to claim 12 which further comprises a plurality of angularly spaced apart guide ribs extending downward from said internal locking bead[, said guide ribs being triangular in vertical cross-section].

15. A cap according to claim 1 in which said side wall is conical.

16. A cap according to claim 15 in which said bottom is round.

17. A cap according to claim 16 in which said scoreline comprises a first stretch along said side wall, a second stretch across said bottom and a third stretch along said side wall, said stretches being joined end to end and lying in a common plane [substantially diametric relative to] containing the axis of said well.

18. A cap according to claim [17] 1 which further comprises a short external rib on said bottom extending away from said scoreline whereby said probe when forced into said well first contacts said rib to initiate splitting said [well] bottom along said scoreline.

19. In combination, a container neck and a cap according to claim 1,

said container neck having a lip, a cylindrical portion below said lip formed with said external first screw thread and a crown bead below said cylindrical portion, said first screw thread having an end formed as a ramp,

said cap having at least one barrier extending substantially vertically downward relative to one of said screw threads into horizontal alignment with said ramp, said skirt being flexible, whereby turning said cap relative to said neck in an unwinding direction so long as said cap is intact causes said cap to expand outward and said screw threads to disengage from each other, and means to tear a portion of said skirt to release said cap from said neck.

20. The combination of claim 19 in which said at least one barrier is on said cap and extends downwardly from approximately 0° of angle of said second screw thread to approximately the elevation of 360° of angle of said second screw thread.

21. The combination according to claim 19 in which said cap is of resilient material whereby said well is restored substantially to initial condition when said probe is withdrawn from said well.

22. The combination of claim 19 in which said side wall is conical.

23. The combination of claim 22 in which said bottom is round.

24. The combination of claim 23 in which said scoreline comprises a first stretch along said wall, a second stretch across said bottom and a third stretch along said side wall, said stretches forming a substantially continuous line in a plane substantially diametric relative to said well.

25. The combination according to claim 24 which further comprises a short external rib on said bottom extending away from said second stretch.

26. In combination, a hollow, apertured probe having a blunt tip, a cap, a container having a neck having external means for detachably engaging said cap, said cap being shaped to fit over said neck and comprising a top and a skirt depending from said top internal means on said skirt to engage said external means to hold said cap on said neck, said top being formed with a central well having a side wall and a bottom, at least one scoreline positioned on said bottom, said blunt tip engagable with said bottom to split said scoreline so said probe may enter said neck.

27. The combination of claim 26 in which said probe seals against said well.

28. The combination of Claim 27 wherein said probe seals against said sidewall.

[illegible][illegible]

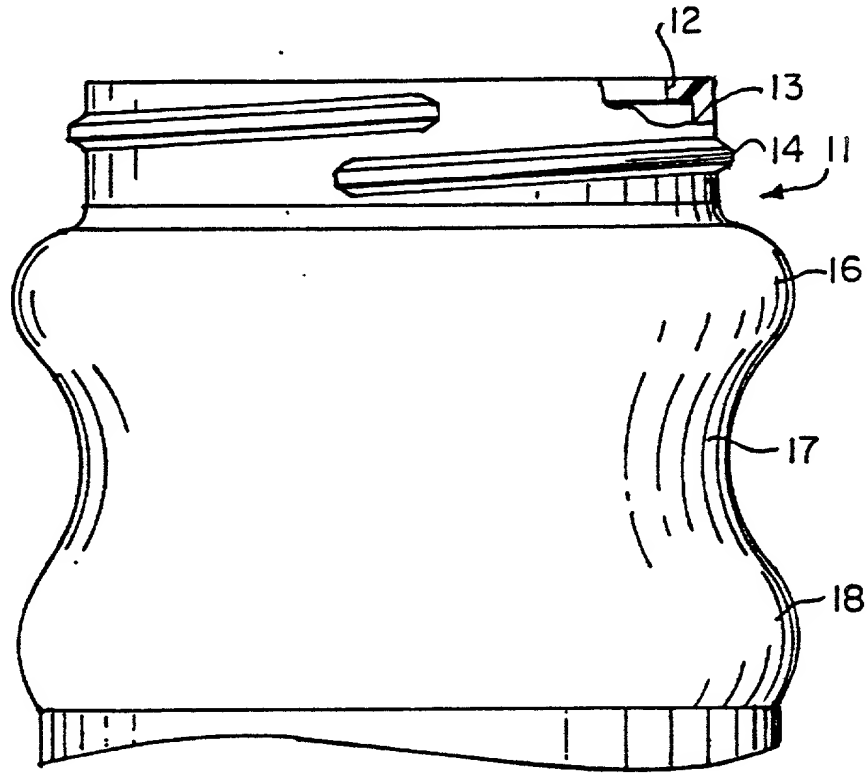


FIG. 1

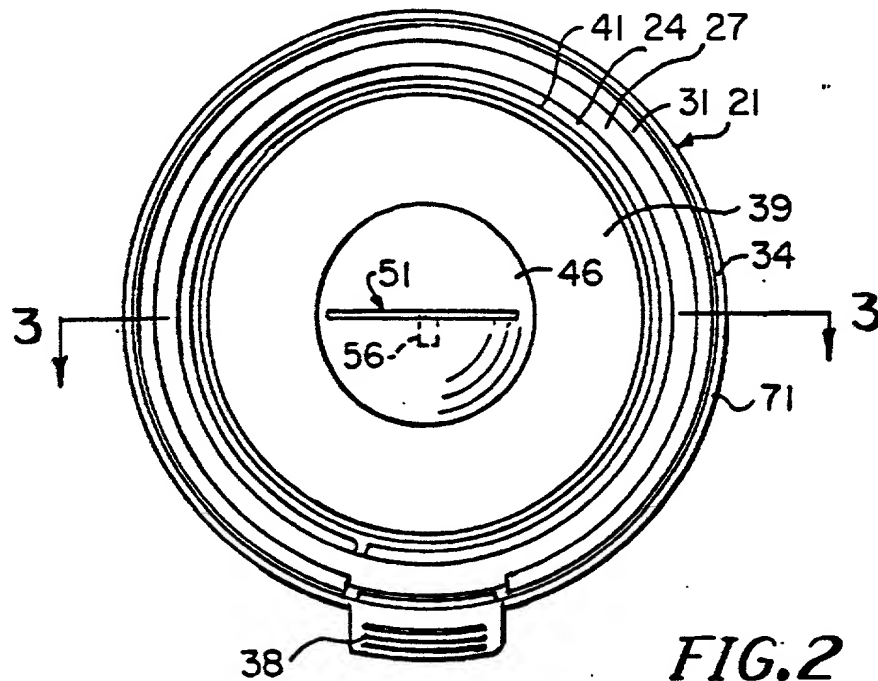
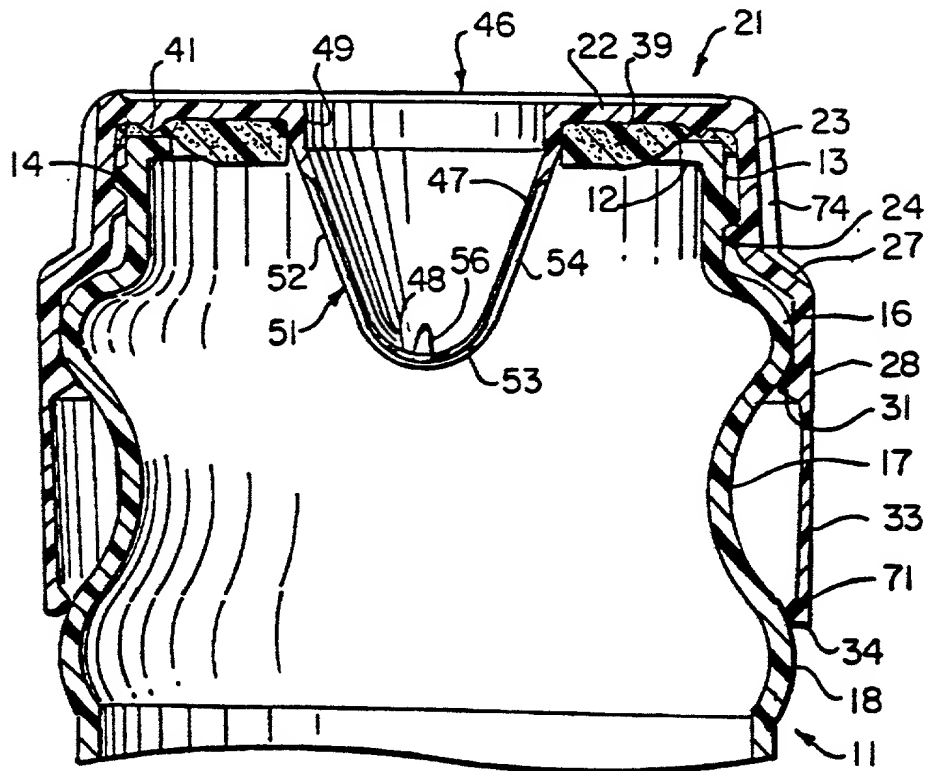
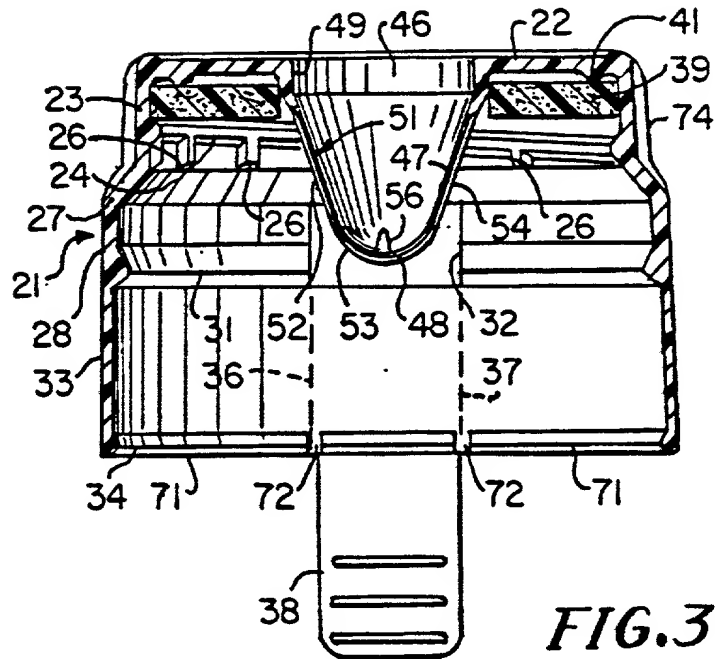


FIG. 2



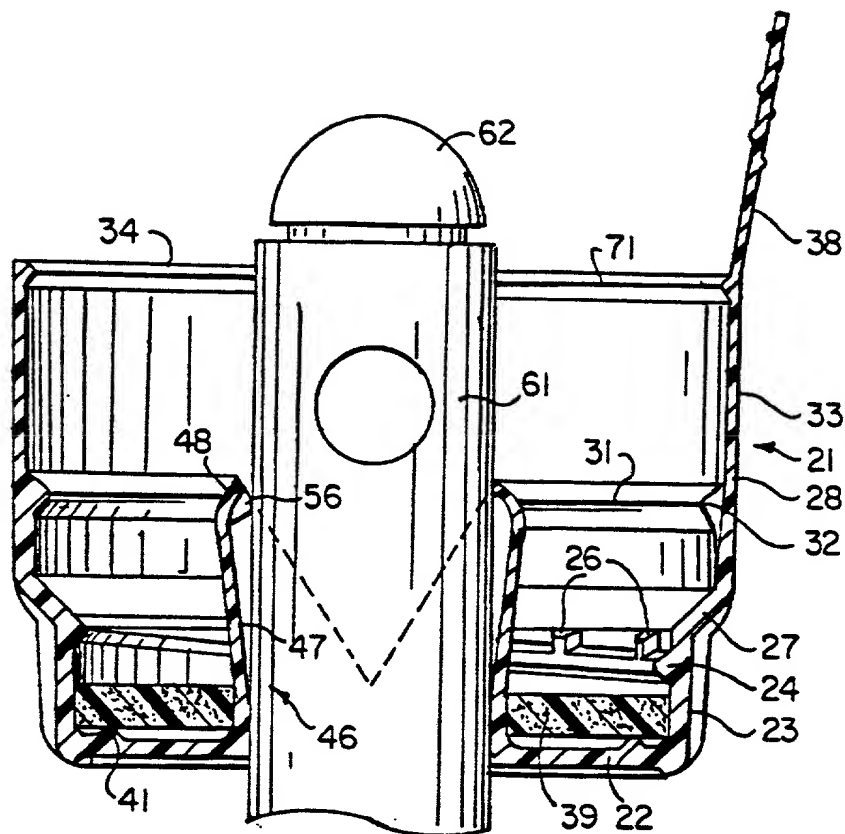


FIG. 5

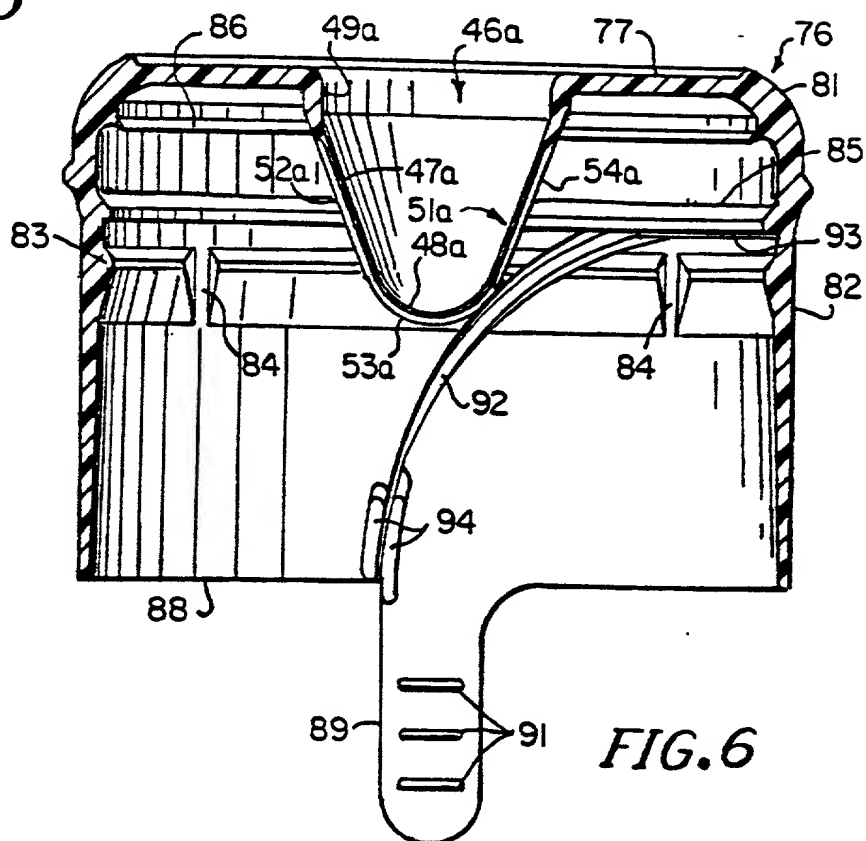


FIG. 6



**REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY  
(BY INVENTORS)**

To the Assistant Commissioner of Patents:

**A. DECLARATION BY THE INVENTORS**

As below named inventors, we hereby declare that:

Our residence, post office address and citizenship are as stated below next to our names, we believe we are the original, first and joint inventors of the subject matter that is described and claimed in the letters patent number 5,687,865, granted on November 18, 1997, and for which invention I solicit a reissue patent on the invention entitled **SPILL-REDUCTION CAP FOR FLUID CONTAINER**

the specification of which is attached hereto.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR  
(37 C.F.R. §1.175)**

We hereby state that we have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

**STATEMENT OF INOPERATIVENESS OR INVALIDITY OF ORIGINAL PATENT  
(37 C.F.R. §1.175)**

That we believe the original patent to be

☒ partly

inoperative or invalid by reason of (37 C.F.R. §1.175(a)(1)):

☒ the patentee claiming more or less than the patentee had a right to claim in the patent.

## REASONS FOR INVALIDITY

The Title Page and the first column of the Specification have been amended in accordance with the Certificate of Correction of this Patent issued November 28, 1998 and to reflect that S.N. 436,936 has issued as Pat. No. 5,662,281.

Claim 1 has been amended to correct the spelling of "skirt" in line 4. It has also been broadened to state that there may be more than one scoreline. Further, that at least one scoreline is positioned on the bottom and further that a probe forced into the well splits the bottom along the scoreline.

Claim 4 has been amended to correct its dependency. It is obviously dependent upon Claim 3.

Claim 5 has been amended to make it dependent upon Claim 9 instead of Claim 1; otherwise there would be no antecedent for some of the words in Claim 5. Further it is spelled out that the absence of relative rotation between the cap and neck is "by external means".

Claim 8 has been broadened to define a means for removing a portion of the locking bead rather than a portion of the skirt.

Claim 10, lines 4 and 5 has been amended to state that the first groove thread has a thread end rather than a to state that it is formed as a ramp of reduced thickness. In the 5th line from last line of Claim 10 the word "ramp" has been changed to --thread end--.

In Claim 11, line 3 the word "and" (first occurrence) has been deleted as a typographical error.

In Claim 12, has been made dependent upon Claim 10 instead of Claim 1; otherwise there would be no antecedents for some of the words in the claim.

Claim 14 has been broadened to eliminate from the last two lines the words "said guide ribs being triangular in vertical cross-section".

Claim 17 has been clarified to state that the three stretches of the scoreline lie in a common plane containing the axis of the well rather than stating that the plane is substantially diametric relative to the well.

Claim 18 is now made dependent upon Claim 1. It is further stated that the probe when forced into the well first contacts the rib to initiate splitting the bottom (of the well) along the scoreline. This is a broadening of the claim.

New Claim 26 recites a combination of a probe having a blunt tip, a cap, and a container

having a neck. U.S. Patent 4,699,188 shows a sharp edged probe which splits the well bottom. Such a sharp edge of the probe would be dangerous to persons installing water bottles in a dispenser containing such a probe. Claim 26 recites that the probe has a blunt tip and the blunt top is engagable with the bottom of the well of the cap to split the scoreline on the bottom of the cap so that the probe may enter the neck. Claims 27 and 28 are dependent directly or indirectly upon new Claim 26.

We verily believe the original patent to be wholly or partly inoperative by reason of patentees claiming less than they had a right to claim in the patent in that the original patent claims required that the scoreline extend along the side wall of the well as well as across the bottom whereas it should have claimed merely that the scoreline extended across the bottom as is now set forth in amended Claims 1-25 and newly presented Claims 26-28.

### **HOW ERRORS AROSE**

The foregoing errors arose without any deceptive intention on the part of applicants.

The error arose because of failure of communication between the inventors and their attorney in that the inventors did not convey to the attorney that their invention was broad enough to comprise a structure in which the scoreline extended only across the bottom of the well in the cap as distinguished from what was shown in the drawings where the scoreline extended along the side wall as well as the bottom.

### **HOW AND WHEN INVENTORS BECAME AWARE OF ERRORS**

The inventors did not become aware of this error in the claims until approximately one month before the submission of this reissue application.

The inventors became aware of the error in the breadth of Claim 1 during the course of a meeting between inventor Daniel Luch and his attorney Julian Caplan on or about April 8, 1999, when a review of the patent claims was conducted.

### **POWER OF ATTORNEY**

We hereby appoint the following practitioners to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Harold C. Hohbach, Reg. No. 17,757; Aldo J. Test, Reg. No. 18,048; Thomas O. Herbert, Reg. No. 18,612; Donald N. MacIntosh, Reg. No. 20,316; Edward S. Wright, Reg. No. 24,903; David J. Brezner, Reg. No. 24,774; Richard E. Backus, Reg. No. 22,701;

James A. Sheridan, Reg. No. 25,435; Robert B. Chickering, Reg. No. 24,286; Richard F. Trecartin, Reg. No. 31,801; Steven F. Caserza, Reg. No. 29,780; Laura L. Kulhanjian, Reg. No. 33,257; Michael A. Kaufman, Reg. No. 32,988; Janet E. Muller, Reg. No. 35,294; Edward N. Bachand, Reg. No. 37,085; R. Michael Ananian, Reg. No. 35,050; Stephen M. Knauer, Reg. No. 38,208; Robin M. Silva, Reg. No. 38,304; David C. Ashby, Reg. No. 36,432; Julian Caplan, Reg. No. 14,785.

**SEND CORRESPONDENCE TO:**

Julian Caplan  
Flehr Hohbach Test Albritton & Herbert LLP  
4 Embarcadero Center, Suite 3400  
San Francisco, CA 94111-4187

**DIRECT TELEPHONE CALLS TO:**

Julian Caplan  
(650) 494-8700

**DECLARATION**

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**☒ BY THE INVENTORS**

Full name of sole or  
first inventor: Brian M. Adams

Inventor's signature: \_\_\_\_\_

Date: \_\_\_\_\_ Citizenship: United States

Residence: Newark, California

Post Office Address: c/o Portola Packaging, Inc  
890 Faulstich Court, San Jose, CA 95112

Full name of joint or  
Second inventor:

Hoa Pham

Inventor's signature:

\_\_\_\_\_

Date:

\_\_\_\_\_

Citizenship:

United States

Residence:

Mountain View, California

Post Office Address:

c/o Portola Packaging, Inc  
890 Faulstich Court, San Jose, CA 95112

Full name of joint or  
Third inventor:

Daniel Luch

Inventor's signature:

\_\_\_\_\_

Date:

\_\_\_\_\_

Citizenship:

United States

Residence:

Morgan Hill, California

Post Office Address:

c/o Portola Packaging, Inc  
890 Faulstich Court, San Jose, CA 95112